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Rain fade mitigation methods and data broadcast systems that provide improved performance in a rain fade environment. The systems distribute data derived from a transmitting processor by way of a data distribution system to one or more receivers located at remote locations. The transmitting processor may include forward error correction processing software that is used to add forward error correction bits to data packets to be transmitted. When error correction bits are added to the data prior to transmission, the receivers include forward error correction software that processes the received data packets to reconstruct the original data. Data packets with or without error correcting bits may be transmitted two times to the remote locations, which times are separated by a time delay having a duration that is related to a rain fade event, which time delay is sufficient to allow data reconstruction in the presence of the rain fade event. The data packets may also be transmitted to the remote locations at a relatively slow transmission rate such that the time required to transmit the data to the one or more remote locations is greater than or equal to the time necessary to transmit the data plus the amount of time equal to an average rain fade event. The data packets are received at the remote locations and appropriately processed to reconstruct the original data.